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CURRENT LITERATURE.

Origin of floral structures.¹

This is No. 63 of the "International Scientific Series." There are many figures of flowers and their parts, and many observations on the characters, insect relations and variations of flowers, which have a value quite distinct from that of the theory which is advanced.

Having laid aside the most fruitful principles which have been applied to the elucidation of floral mechanisms, the author goes back to the "monde ambiant" of Geoffroy Saint Hilaire, and undertakes to account for the forms of flowers as the *direct* result of insect agency. Insects stimulate "the flowers till they become thoroughly adapted to their visitors." Conversely, the neglect of insects is "accompanied by corresponding degradations in the perianth, stamens and pollen." The flower, "if it be visited by many, will presumably take a form corresponding to the resultant of the forces brought to bear upon it; if visited by few, it will shape itself in accordance with the requirements of its principal visitors." This considers flowers as developing in a way subservient to the uses of insects, instead of as utilizing them as servants. Adaptations for crossing, being the result of the direct agency of insects, have nothing to do with any advantage resulting from cross-fertilization. The Darwinian theories of natural selection and of cross-fertilization are thus wholly repudiated. But we are so far from being convinced that insects have given rise to useful variations that we even doubt whether they have induced any of the modifications which have been appropriated through natural selection. Moreover, it is easy to show that the characters of flowers are not what they would be expected to be according to the theory. In regard to irregularity he says: "The immediate causes, I repeat, I could recognize in the weight of the insect in front, the local irritation behind, due to the thrust of the insect's head and probing for nectar, coupled with the absence of all strains upon the sides."

But in sternotribe flowers the part which the insect touches the least is the strongest developed. Thus, in Papilionaceæ the banner is quite as large as the two lower petals together, and often as large as the four others, and is largest in those flowers in which it touches the insect the least. The labellum of orchids is a similar case, and its enlargement, instead of being a result of its use as a landing after inversion, is rather the cause of the inversion. The theory involves equal disregard of the function of the expanded parts of flowers and of the conditions under which they were developed. As an example of a flower in the first stage of irregularity, the author cites *Verbascum*, a descendant of the ancient zygomorphous type of Personales. The two genera with which it forms the

¹ HENSLAW, REV. GEORGE.—The Origin of Floral Structures through Insect and other Agencies. pp. xx, 350. New York: D. Appleton & Co. 1888.

Verbasceæ are didynamous, and it is evidently of that type. The corolla has become so shallow as to expose the stamens so that insects could light upon them, and the fifth stamen has resumed its antheriferous function. The enlargement of the lower lobe and the unequal length of the stamens, instead of indicating an incipient stage, as the author supposes, refer rather to a former condition. Although it is evident that natural selection must act, at least until after dissemination, we are told, in chap. xxxii, that "the principal period of the struggle for life takes place in the seedling stage, before any varietal and specific characters have appeared." The search for the reason of the author's views is rewarded in this chapter, where we read: "I must confess, it (natural selection) conveys nothing definite to my mind." Having observed that insects have something to do with the forms of flowers, the author is thus under the subjective necessity of referring these forms to their direct instead of their selective influence. However, the book can not be said to be without an important theoretical bearing, since it tends to support the view that but for the principle of selection the theory of evolution would be where Lamarck left it.—R.

NOTES AND NEWS.

A VOLUME on the folk-lore of plants, by T. F. Thiselton Dyer, is announced from the press of Appleton & Co.

THE BOTANISCHES CENTRALBLATT, which has for so long been published by Theodor Fischer, has been transferred to the house of the Gebrüder Gotthelft.

MR. B. FRANK LEEDS reports *Euphorbia peplus* as spreading rapidly in Santa Clara county, California. *E. Lathyris*, in the same region, attains a height of six or seven feet.

It is interesting to note that one-fourth the present membership of the Society for the Promotion of Agricultural Science is composed of botanists, and that so large a part as one-third of the papers printed in the proceedings for 1888 are botanical.

MR. F. H. KNOWLTON has in preparation a manual of palæobotany, which he hopes to have ready for the press by the end of the following year. The work will be illustrated from American material as far as possible, and will give an account of all the orders, and, when possible, the genera, of fossil plants.

THE WESTERN SOCIETY OF NATURALISTS met at the University of Illinois, October 24 and 25. A number of papers were read, relating to the teaching of botany. The following botanists were present and took part in the discussions: J. C. Arthur, Purdue University; W. J. Beal, Agricultural College of Michigan; T. J. Burrill, University of Illinois; D. H. Campbell, Indiana University; John M. Coulter, Wabash College; Stanley Coulter, Purdue University; Thomas McBride, Iowa University; W. H. Hatch, Rock Island; Charles Robertson, Carlinville, Ill.